

WHAT IS CLAIMED IS:

1. A process for making a pre-label receiver sheet comprising a pragmatic pre-label sheet and a carrier sheet, which pragmatic pre-label sheet comprises, in order, a polymeric image-receiving layer, a pragmatic polymer sheet, and an adhesive layer, which process comprises the following steps:

(a) providing a pragmatic pre-label sheet by the following steps:

(i) co-extruding a first melt for a polymeric image-receiving layer with one or more other melts for forming a single-layer or multiple-layer pragmatic polymer sheet, wherein said one or more other melts includes a second melt comprising an orientable thermoplastic polymeric material for forming a microvoided layer comprising a void initiator, thereby forming a co-extruded cast composite film comprising at least said image-receiving layer and said microvoided layer;

(ii) stretching in at least one direction said cast composite film to reduce the thickness of the layers in the composite film and to produce an oriented composite film, wherein the image receiving layer is less than 15 micrometers thick; and

(iii) optionally applying an intermediate sheet, comprising one or more layers, to the back surface of the stretched composite film;

(iv) applying a pressure-sensitive adhesive layer, or a laminate comprising a pressure-sensitive adhesive layer, to at least a portion of the back surface side of the stretched composite film, on the side opposite the image-receiving layer, to form a pre-label receiver sheet or, when an intermediate sheet is present, to at least a portion of the back surface of the intermediate sheet;

(b) providing the pre-label receiver sheet with a carrier sheet such that the adhesive layer of the pre-label receiver sheet is releasably covered with the carrier sheet in peelable adhesion, thereby forming an integral-separable pre-label receiver sheet.

2. The process of claim 1 wherein the carrier sheet is laminated to the pragmatic pre-label sheet so that a front surface of the carrier sheet faces the back surface of the pragmatic pre-label sheet.

3. The process of claim 1 wherein at least one pragmatic-label portion is formed in the pragmatic pre-label sheet by cutting a shape through the pragmatic pre-label sheet but not through the carrier sheet.

4. The process of claim 1 wherein the microvoided layer comprises a polyester material.

5. The process of claim 1 wherein the microvoided layer and the image-receiving layer both comprise a polyester material.

6. The process of claim 1 wherein the pragmatic polymer sheet further comprises a coextruded second layer in addition to the microvoided layer, said microvoided layer having a top side and bottom side, wherein the coextruded second layer is on the bottom side of the microvoided layer and the image-receiving layer is on the top side of the microvoided layer.

7. The process of claim 1 wherein the pragmatic pre-label sheet consists essentially of only coextruded biaxially stretched layers above the pressure-sensitive adhesive layer.

8. The process of claim 1 wherein the pragmatic pre-label sheet consists essentially of the image-receiving layer and the pragmatic polymer sheet.

9. the process of claim 1 wherein the pressure-sensitive adhesive layer is coated onto a peelable carrier to form a pressure-sensitive adhesive transfer sheet, wherein the transfer sheet is laminated to the back side of the stretched composite film such that steps (a)(iv) and (b) occur simultaneously.

10. The process of claim 1 wherein the carrier sheet comprises more than one layer and the layers of the carrier sheet are applied to the pre-label receiver sheet in more than one step.

11. A process for making a label sheet comprising a pragmatic label sheet and a carrier sheet, which pragmatic label sheet comprises, in order, an imaged polymeric image-receiving layer, a pragmatic polymer sheet, and an adhesive layer, which process comprises the following steps:

(a) providing a pragmatic pre-label sheet by the following steps:

(i) co-extruding a first melt for a polymeric image-receiving layer with one or more other melts for forming a single-layer or multiple-layer pragmatic polymer sheet, wherein said one or more other melts includes a second melt comprising an orientable thermoplastic polymeric material for forming a microvoided layer comprising a void initiator, thereby forming a co-extruded cast composite film comprising at least said image-receiving layer and said microvoided layer;

(ii) stretching in at least one direction said cast composite film to reduce the thickness of the layers in the composite film and to produce an oriented composite film, wherein the image receiving layer is less than 15 micrometers thick; and

(iii) optionally applying an intermediate sheet, comprising one or more layers, to the back surface of the stretched composite film;

(iv) applying a pressure-sensitive adhesive layer, or a laminate comprising a pressure-sensitive adhesive layer, to at least a portion of the back surface side of the stretched composite film, on the side opposite the image-receiving layer, to form a pre-label receiver sheet or, when an intermediate sheet is present, to at least a portion of the back surface of the intermediate sheet;

(b) providing the pre-label receiver sheet with a carrier sheet such that the adhesive layer of the pre-label receiver sheet is releasably covered with the carrier

sheet in peelable adhesion, thereby forming an integral-separable pre-label receiver sheet.

(c) imagewise thermally transferring dyes to form at least one image in the image-receiving layer;

(d) cutting at least one shape into at least the pre-label receiver sheet to form at least one pragmatic label comprising a thermal-dye-transfer image, thereby forming an integral-separable label sheet comprising a pragmatic-label sheet attached to a carrier sheet.

12. The process of claim 11 wherein in step (d), cutting lines are formed at least partially through the integral-separable pre-label receiver sheet, so to allow peeling of at least one pragmatic label portion comprising a portioned (a) imaged image-receiving layer, (b) substrate, and (c) bottom pressure-sensitive adhesive layer, wherein the substrate consists of all the layers, including the portioned (i) pragmatic polymer and (ii) optional intermediate sheet, between the image-receiving layer and the bottom pressure-sensitive layer.

13. The process of claim 1 where the integral-separable label sheet comprises a plurality of pragmatic-label portions and cutting lines are formed around and through each pragmatic-label portion but substantially not in or through the carrier sheet.

14. The process of claim 10, wherein multiple pragmatic-label portions in the sheet are formed by sectioning the sheet into a plurality of frames each forming a separable pragmatic label.

15. The process of claim 1 wherein at least one dye image, optionally plurality of dye-images, are formed on the image-receiving layer.

16. The process of claim 15 wherein the dye image is a sublimation transferred image formed in said receiving layer by transferring a sublimable dye from a colorant layer of a dye-donor element or heat transfer sheet.

17. The process of claim 16 wherein the image has a print density of at least 1.5.

18. The process of claim 17 wherein the image has a print density of the image is at least 2.0.

19. The process of claim 1 wherein the microvoided layer comprises a continuous phase polyester matrix having dispersed therein void initiators selected from the group consisting of crosslinked organic microbeads, inorganic particles, non-crosslinked polymer particles that are immiscible with the polyester matrix, or combinations thereof, said microvoided layer having a void volume of at least 25% by volume.

20. The process of claim 1 wherein the microvoided layer comprises a continuous phase polyester matrix having dispersed therein a mixture of crosslinked organic microbeads and non-crosslinked polymer particles that are immiscible with the polyester matrix, said layer having a void volume of at least 25% by volume.

21. The process of claim 1 wherein the microvoided layer comprises crosslinked organic microbeads that are dispersed in a continuous phase polyester matrix, said layer having a void volume formed by said microbeads of at least 25% by volume.

22. The process of claim 20 or 21 wherein the pragmatic polymer sheet further comprises a coextruded third layer comprised of a voided or non-voided material.

23. The process of claim 20 or 21 wherein the coextruded third layer comprises polyester.

24. The process of claim 21 wherein the microvoided layer comprises a continuous phase polyester matrix having dispersed therein substantially only crosslinked polymer microbeads.

25. The process of claim 20 or 2 wherein the pragmatic polymer sheet further comprises a coextruded third layer comprised of a non-voided polyester.

26. The process of claim 20 or 21 wherein the microvoided layer has a void volume of from 25 to 65 volume %.

27. The process of claim 20 or 21 wherein said continuous phase polyester matrix of said microvoided layer comprises polyethylene(terephthalate) or a copolymer thereof.

28. The process of claim 20 or 21 wherein said continuous phase polyester matrix of said microvoided layer comprises a blend comprising polyethylene(terephthalate) and poly(1,4-cyclohexylene dimethylene terephthalate).

29. The process of claim 20 or 21 wherein said crosslinked organic microbeads comprise a polymer comprising a monomeric unit formed by at least one of styrene, butyl acrylate, acrylamide, acrylonitrile, methyl methacrylate, ethylene glycol dimethacrylate, vinyl pyridine, vinyl acetate, methyl acrylate, vinylbenzyl chloride, vinylidene chloride, acrylic acid, divinylbenzene, arylamidomethyl-propane sulfonic acid, vinyl toluene, and trimethylol propane triacrylate.

30. The process of claim 26 wherein said crosslinked organic microbead comprises a poly(methyl methacrylate) or poly(butyl acrylate) polymer.

31. The process of claim 20 wherein said non-crosslinked polymer particles that are immiscible with said polyester matrix have an olefinic backbone.

32. The process of claim 31 wherein said non-crosslinked polymer particles that are immiscible with said polyester matrix comprise polymers derived from a monomer selected from propylene and/or ethylene.

33. The process of claim 1 or 11 wherein said microvoided layer has a density of less than 0.95 grams/cc.

34. The process of claim 33 wherein said microvoided layer has a density of from 0.4 to 0.90 grams/cc.

35. The process of claim 1 or 11 wherein the total thickness of said microvoided layer, after stretching, is from 20 to 150 micrometers.

36. The process of claim 1 or 11 wherein said image-receiving layer comprises a polymeric binder containing a polyester and/or polycarbonate.

37. The process of claim 36 wherein a blend of polyester and polycarbonate is present in the image-receiving layer in a weight ratio of 90:10 to 10:90.

38. The process of claim 20 wherein the ratio of the volume of crosslinked organic microbeads to the volume of said non-crosslinked polymer particles that are immiscible with said polyester matrix is from 4:1 to 1:4.

39. A process for making a integral-separable pre-label receiver sheet, comprising a pragmatic pre-label sheet and a carrier sheet, which pragmatic pre-label sheet comprises, in order, a polymeric image-receiving layer, a pragmatic polymer sheet, and an adhesive layer, which process comprises the following steps:

(a) providing a pragmatic pre-label sheet by the following steps:

(i) co-extruding a first melt for a polymeric image-receiving layer with at least two other melts for forming a multiple-layer pragmatic polymer sheet, wherein said at least two other melts includes a second melt comprising a continuous phase polymer matrix having dispersed therein crosslinked organic microbeads and optionally non-crosslinked polymer particles, and a third melt comprising a voided or non-voided thermoplastic material, thereby forming a coextruded cast composite film comprising at least said three layers, the image—receiving layer, the microvoided layer and the voided or non-voided thermoplastic material;

(ii) stretching in at least one direction said cast composite film to reduce the thickness of the layers in the composite film and to produce an oriented composite film comprising as the first layer an image-receiving layer, as the second layer a microvoided compliant layer, and as a third layer a microvoided or non-voided underlayer, wherein the image receiving layer is less than 15 micrometers thick; and

(iii) optionally applying an intermediate sheet, comprising one or more layers, to the back surface of the stretched composite film;

(iv) applying a pressure-sensitive adhesive layer, or a laminate comprising a pressure-sensitive adhesive layer, to at least a portion of back surface side of the stretched composite film, on the side opposite the image-receiving layer, to form a pragmatic-label sheet or, when an intermediate sheet is present, to at least a portion of the back surface of the intermediate sheet; and

(b) providing the pragmatic pre-label sheet with a carrier sheet such that the adhesive layer of the pragmatic pre-label sheet is releasably covered with the

carrier sheet in peelable adhesion, thereby forming an integral-separable pre-label receiver sheet.

40. The process of claim 37 wherein in step a(i) the at least two other melts includes a second melt comprising a continuous phase polymer matrix having dispersed therein crosslinked organic microbeads and non-crosslinked particles that are immiscible with the polyester matrix, and a third melt comprising a voided or non-voided thermoplastic material, thereby forming a coextruded cast composite film comprising at least said three layers.

41. The process of claim 1 wherein the pre-label sheet is imaged with a thermal dye transfer process including the printing of fiducial marks with a density of greater than 0.5.

42. The process of claim 11 further comprising exposed edges having a width of less than 20 mm.

43. The process of claim 1 wherein said peelable carrier has a stiffness of between 15 and 60 millinewtons.

44. The process of claim 11 further comprising removing said carrier and applying said pragmatic label portion to a package or container.

45. A thermal dye transfer assemblage comprising a dye-donor element, and the pre-label receiver sheet of claim 1.